REMARKS

Claims 1-29 were pending in the application. Claims 1-29 stand rejected. Claims 2, 6-8, 11, 16, 18-19, and 22-26 have been cancelled. Claims 1, 3-5, 9, 13-14, and 21 have been amended. Claims 30-40 have been added. Claims 1, 3-6, 9-10, 12-15, 17-21, and 27-40 remain in the application.

Claims were cancelled to equal the number of added claims.

Claims 1-12, 14, 16, 18-28 stand rejected under 35 U.S.C. 102(b) as being anticipated by Reuman (US Patent 6,096,982 A). Claims 13 and 15 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Reuman (US Patent 6,069,982 A) and in view of Baba et al. (US Patent 4,804,831 A). Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Reuman (US Patent 6,069,982 A) and in view of May (US Patent 6,067,125 A). Claim 29 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Reuman (US Patent 6,069,982) in view of Savakis et al. (US Patent 6,738,494 B1).

Claim 1 was amended to incorporate the limitations of original Claims 2 and 16 and now states:

> 1. A method for estimating the noise appearance in an image, comprising the steps of:
>
> a) forming a noise table representing noise magnitude vs. intensity of the image; and
>
> b) generating a noise metric from the noise table, said noise metric representing the noise appearance in the image as seen by a human observer;
>
> wherein the step of forming a noise table includes the steps of:
>
> a1) forming an input noise table representing noise magnitude vs. intensity of an input image;
>
> a2) providing an image processing chain including one or more image transforms;
>
> a3) determining an appropriate noise transform defining the effect that each image transform will have on the noise in the image; and

a4) applying the one or more noise transforms to the input noise table to produce the noise table representing an estimate of the noise in the image; and

further comprising the steps of: forming a predetermined input noise table for a specific image capture process; using the predetermined input noise table to generate the noise metric for an image captured by the specific process.

The rejection stated in relation to Claim 16:

'Regarding claim 16, Reuman discloses the method claimed in claim 2, further comprising the steps of:

'forming a predetermined input noise table for a specific image capture process (Reuman states," In FIG. 1, box 2 queries whether full knowledge associated with selected tags of a spatial device profile of the image is available (col. 5, lines 11-13).");

'using the predetermined input noise table(fig. 2A,num. 38 classifies devices by a particular default class at numeral 40 of fig. 2A at col. 9, lines 2-6.) to generate the noise metric for an image captured by the specific process.'

Reuman does not support the rejection. It is unclear whether the rejection is arguing a yes or no answer to box 2 of Reuman, Figure 1.

If the rejection is arguing that the "predetermined input noise table" corresponds to a yes answer to box 2: "FULL KNOWLEDGE OF THE IMAGE NOISE CHARACTERISTICS?", then Reuman teaches against the rejection. A "YES" answer to the query of box 2 of Reuman, Figure 1, leads to box 14: "END" and bypasses box 10: "GENERATE IMAGE NOISE CHARACTERISTICS FROM USER KNOWLEDGE AND IMAGE DATA". This contradicts the rejection, which argues for use of the "predetermined input noise table" in an aspect of Reuman, Figure 2A, which is part of box 10. (See Reuman, Figure 2A, "From 8" at top; col. 5, line 63 to col. 6, line 32; also see the Office Action, page 3, lines 7-8: "Note that the process of fig. 2A, num 36 is shown in figure 1, num. 10")

If the rejection is arguing that the "predetermined input noise table" corresponds to a no answer to box 2: "FULL KNOWLEDGE OF THE IMAGE NOISE CHARACTERISTICS?", then Reuman also teaches against the rejection. A "NO" answer to the query of box 2 of Reuman, Figure 1, leads to box 4: "ACCESS

DEFAULT INFO FOR IMAGE NOISE CHARACTERISTICS". This default information corresponds to the default class at box 40 in Reuman, Figure 2A. Reuman states:

> "However, if any information of the selected spatial tags is incomplete or missing, then default spatial device profile tags are substituted as in box 4. The default tags are most likely predetermined and accessed from memory, although the default tag information could conceivably be provided by an operator. These default tags relate to a worst case scenario where no knowledge is available for any of the selected tags, so the default tags represent values which can be used to approximate any type of image acquisition device. For instance, an average of frequency domain power spectra of the noise of a large number of image acquisition devices from all classes (e.g. scanners, digital cameras, etc.) may be used as the default value of the frequency domain spectrum of the noise in an image acquired from an unknown image acquisition device." (Reuman, col. 5, lines 19-33; emphasis added)
>
> "By default, B_Y is set to (1.3,1.54) for a Y band. These represent average values determined from all image acquisition devices for which data is available. Box 38 in FIG. 2A determines whether the device class is known. If the input device class is known (e.g. the user has told the system that the device is in the camera class vs. the scanner class), then the default B_Y is set in box 40 as the average value for the appropriate device class. The default B_Y may be adequate if the noise of future devices is expected to closely follow the devices averaged in the default sample." (Reuman, col. 8, line 66 to col. 9, line 9; emphasis added)

The default value does not represent the predetermined input noise table for a specific image capture process required by Claim 1. The default value is either an approximation for any type of image acquisition device or an average of values for a particular class of capture devices. In both cases the default value is not for a specific image capture process.

Claims 3-5, 9-10, 12-14, 17-21, and 27-29 are allowable as depending from Claim 1 and as follows.

Claims 3-5 were amended to change dependency to Claim 1 and to match the nomenclature used in Claim 1.

Claim 14 was corrected to depend from Claim 27.

Claims 17-19 were amended to depend from Claim 1.

The office action states as to Claim 17:

> 'Regarding claim 17, Reuman discloses the method claimed in claim 16, wherein the image capture process is a photographic process ('video camcorder" col. 5, lines 42,43 or "camera class" at col. 9, line 5).
>
> 'Reuman does not teach the use of a particular film, but Reuman does teach that any type of image acquisition device can be used at col. 5, lines 27,28. However, May, in the field of endeavor of noise reduction, does teach the use of a particular film ("film source, such as a motion picture (col. 1, lines 55-57).").
>
> 'It would have been obvious at the time the invention was made to one of ordinary skill in the art to modify Reuman's image acquisition with May's film because "Film grain noise... is part of the "film look" that most people desire... (May, col. 1, lines 5761).").'

Claim 17 states:

> 17. The method claimed in claim 1, wherein the image capture process is a photographic process using a particular photographic film.

Claim 17 requires forming a predetermined input noise table for the specific image capture process, as discussed above in relation to Claim 1. In Claim 17, the specific capture process is: a photographic process using a particular photographic film. The combination of Reuman and May would not teach forming a predetermined input noise table for a photographic process using a particular photographic film. Reuman specifically teaches to the contrary:

> "If the input device class is known (e.g. the user has told the system that the device is in the camera class vs. the scanner class), then the default B_Y is set in box 40 as the average value for the appropriate device class." (Reuman, col. 9, lines 3-7; emphasis added)

May would not overcome this teaching. May does not address use of a particular film. (May, col. 1, line 55-col. 2, line 17.) May discusses "motion picture" film in relation to film grain noise. The application makes clear that film grain noise is a function of a particular photographic film, not whether the film was used for motion sequences or still images:

"In a traditional photographic system, these variations in the density can be observed through physical measurement by measuring the optical density of photographic materials, such as film or paper, with a microdensitometer. The root mean square (rms) value or standard deviation is used as a measure of the variation in density of an otherwise uniform area. This value is referred to as the granularity. An output image is perceived by an observer and the perception of these unwanted, random fluctuations in optical density are called graininess or noise appearance. Thus, the physically measured quantity of granularity is perceived by the observer as a level of graininess." (Application, page 1, lines 16-26)

The rejection states as to Claims 18-19:

'Regarding claim 18, Reuman discloses the method claimed in claim 16, wherein the image capture process is an image scanning process employing a particular film scanner ("scanner class" at col. 9, line 5).'

'Regarding claim 19, Reuman discloses the method claimed in claim 16, wherein the image capture process employs a particular digital camera ("camera class" at col. 9, line 5.).'

Claims 18-19 state:

18. The method claimed in claim 1, wherein the image capture process is an image scanning process employing a particular film scanner.

19). The method claimed in claim 1, wherein the image capture process employs a particular digital camera.

Claims 18-19 require forming a predetermined input noise table for the specific image capture process, as discussed above in relation to Claim 1. In Claims 18-19 the specific capture process is: an image scanning process employing a particular film scanner (Claim 18) and an image capture process employing a particular digital camera (Claim 19). The rejection cites the portions of Reuman that argue against the rejection: "scanner class" at col. 9, line 5" and "camera class" at col. 9, line 5" (emphasis added). These are classes that provide average values for scanners or cameras, rather than the predetermined input noise table for the

paricular film scanner (Claim 18) or digital camera (Claim 19). (See Reuman, col. 5, lines 19-33 and col. 8, line 66 to col. 9, line 9; quoted and discussed above)

Claim 21 is a combination of original claims 21-26.

Added Claims 30-40 are supported and allowable on the same grounds as the above-discussed claims, as follows: Claims 30-40 are supported by Claims 17-19, 9-10, 12-15, and 29, respectively.

It is believed that these changes now make the claims clear and definite and, if there are any problems with these changes, Applicants' attorney would appreciate a telephone call.

In view of the foregoing, it is believed none of the references, taken singly or in combination, disclose the claimed invention. Accordingly, this application is believed to be in condition for allowance, the notice of which is respectfully requested.

Respectfully submitted,

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